Data to Knowledge

or

Data Mining for Value

‘A Demonstration of Data Analytics to Optimize the Mining Value Chain’

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Outline

• Genesis of the project
• The real need in the mining industry
• The structure of the project
• Next Steps
• Questions
Genesis of the project

- CMIC Workshop in December 2018
  - A real desire to define how data can be used to make better real time process decisions and better business decisions
  - Recognized the challenge to effectively collect, assess and use the quantity of data that is currently available
  - Looked to a collaborative project, through CMIC member companies
The real need in the mining industry

• The industry is reasonably well equipped from sensors, to control systems and data collection systems
• Some companies have been using advanced software, expert systems and now AI systems
• However, when comparing to other industries, more can be done to use datasets and analytics tools to (automatically) provide direct key information for decisions.
• Ultimately, plant digital twins could be built.....
Project Partners

• Mining Companies
  – NEWMONT / GOLDCORP
  – AGNICO EAGLE
  – GLENCORE
  – TECK

• Execution Team
  – XPS
  – COREM

• Potential technology partners/companies
  – COMPUTE ONTARIO
  – NRC / MCGILL / UOIT
  – GOLDFIELDS
Proposed Project Structure

• Phase 1 - a survey to establish how data are managed in each company
  – Survey
  – Process mapping
  – Data review
    • Determine fit for purpose
    • Qualitative assessment of data
  – Collate best practices
  – Issue results

• Phase 2
  – Select dataset(s) for parallel trials of various analytics tools/algorithms
  – Data Cleaning

Note: The project will not be focused on specific brands and packages but on methods and technology
The structure of the project

Phase 1
- Survey
  - Process mapping
  - Data review
  - Determine fit for purpose
  - Qualitative assessment of data
  - Collate best practices
  - Issue results

- Analytics
  - Data Cleaning
    - What data can tell us?
    - How can we build knowledge from?
    - What algorithm works best?
  - AI
    - Machine Learning
  - Deep Learning

Phase 2
- Intelligent KPI
- Predictive Maintenance
- Right information
- Energy Optimization
- Utilities cost reduction
- Right peoples
- Advisory (Horizontal – Vertical)
- Automatic Root Cause
- Right time
- Performance / Quality Gap Prediction
- Reduce Environmental Impact
- Right Automated action
- Soft Sensors
- Event Prediction
- Schedule optimization
- Expert System / Advanced Ctrl
- Alarm Rationalization
- Transition Management
- Collaborative work on data collection
- Collaborative work on Analytics and models
- Industrial Platforms
- Visible Gains
Next Steps

• XPS to write the questionnaire
• XPS and COREM to establish budget and schedule for the project

Thank you!